

What is claimed is:

1. A precipitated silica which has the following physical and chemical properties:

5	CTAB surface area	100-160 m ² /g
	BET surface area	100-190 m ² /g
	DBP value	180-300 g/(100 g)
	Sears value V ₂	15-28 ml/(5 g)
	Moisture level	4-8%.
- 10 2. The precipitate silica as claimed in claim 1, wherein the BET surface area is 100 to 170 m²/g.
- 15 3. The precipitated silica as claimed in claim 1 or 2, wherein the CTAB surface area is from 100 to 150 m²/g.
- 20 4. The precipitated silica as claimed in any of claims 1 to 3, wherein the Sears value V₂ is from 20 to 28 ml/(5 g).
- 25 5. The precipitated silica as claimed in any of claims 1 to 3, wherein the Sears value V₂ is from 22 to 28 ml/(5 g).
- 30 6. The precipitated silica as claimed in any of claims 1 to 5, wherein the DBP value is from 200 to 250 g/(100 g).
- 35 7. The precipitated silica as claimed in any of claims 1 to 5, wherein the DBP value is from 250 to 280 g/(100 g).

8. The precipitated silica as claimed in any of claims 1 to 7,
wherein
5 the ratio of Sears value V_2 to the BET surface area is from 0.140 to 0.280 ml/(5 m²).
9. The precipitated silica as claimed in any of claims 1 to 8,
10 wherein
the BET/CTAB ratio is from 0.9 to 1.2.
10. A process for preparing precipitated silicas,
which comprises
15 a) taking an aqueous solution of an alkali metal silicate or alkaline earth metal silicate and/or of an organic and/or inorganic base with an alkali value from 7 to 30 as initial charge,
b) metering water glass and an acidifier
20 simultaneously into this initial charge at from 55 to 95°C, with stirring, for from 10 to 120 minutes, in such a way that during the precipitation the AV remains constant at from 7 to 30,
25 c) using an acidifier to acidify to pH of from approx. 2.5 to 6, and
d) filtering, washing and drying.
11. The process as claimed in claim 10,
30 wherein
the AV is from 15 to 25.
12. The process as claimed in claim 10 or 11,
wherein
35 after step a), the steps carried out comprise
b') stopping the feed for from 30 to 90 minutes while maintaining the temperature, and
b'') then, at the same temperature, for from 10 to

120 minutes, preferably from 10 to 60 minutes, simultaneously adding water glass and an acidifier in such a way that the AV remains constant during the precipitation.

5

13. The process as claimed in claim 10 or 12, wherein during step b) and/or b') and/or b'') an organic or inorganic salt is added.

10

14. The process as claimed in any of claims 10 to 13, wherein for the drying process use is made of a pneumatic drier, spray drier, disk drier, belt drier, rotating-tube drier, flash drier, spin flash drier, or spray tower.

15

15. The process as claimed in claims 10 to 14, wherein after the drying process, a roller compactor is used for pelletizing.

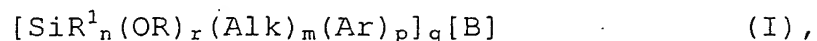
20

16. The precipitated silica claimed in any of claims 1 to 9, or prepared as claimed in any of claims 10 to 15, wherein.

25

the surface of the silica has been modified with organosilanes of the formulae I to III

30



or



where

35

B is -SCN, -SH, -Cl, -NH₂, -OC(O)CHCH₂, -OC(O)C(CH₃)CH₂ (if q = 1), or -S_w- (if q = 2), B being chemically bonded to Alk, R and R¹ are an aliphatic, olefinic, aromatic, or

arylaromatic radical having 2-30 carbon atoms, optionally with substitution by the following groups: the hydroxyl, amino, alcoholate, cyanide, thiocyanide, halo, sulfonic acid, sulfonic ester, thiol, benzoic acid, benzoic ester, carboxylic acid, carboxylic ester, acrylate, methacrylate, or organosilane radical, where the meaning or substitution of R and R¹ may be identical or different,

n is 0, 1, or 2,

Alk is a bivalent unbranched or branched hydrocarbon radical having from 1 to 6 carbon atoms,

m is 0 or 1,

Ar is an aryl radical having from 6 to 12 carbon atoms, preferably 6 carbon atoms, which may have substitution by the following groups: the hydroxyl, amino, alcoholate, cyanide, thiocyanide, halo, sulfonic acid, sulfonic ester, thiol, benzoic acid, benzoic ester, carboxylic acid, carboxylic ester, acrylate, methacrylate or organosilane radical,

p is 0 or 1, with the proviso that p and n are not simultaneously 0,

q is 1 or 2,

x is a number from 2 to 8,

r is 1, 2, or 3, with the proviso that $r + n + m + p = 4$,

Alkyl is a monovalent unbranched or branched saturated hydrocarbon radical having from 1 to 20 carbon atoms, preferably from 2 to 8 carbon atoms,

Alkenyl is a monovalent unbranched or branched unsaturated hydrocarbon radical having from 2 to 20 carbon atoms, preferably

from 2 to 8 carbon atoms.

17. The precipitated silica as claimed in any of claims 1 to 9 or as prepared in any of claims 10 to 15,

whose

surfaces have been modified with organosilicon compounds whose composition is

$\text{SiR}^2_{4-n}\text{X}_n$ (where $n = 1, 2, 3, 4$),

$[\text{SiR}^2_x\text{X}_y\text{O}]_z$ (where $0 \leq x \leq 2$; $0 \leq y \leq 2$; $3 \leq z \leq 10$, where $x + y = 2$),

$[\text{SiR}^2_x\text{X}_y\text{N}]_z$ (where $0 \leq x \leq 2$; $0 \leq y \leq 2$; $3 \leq z \leq 10$, where $x + y = 2$),

$\text{SiR}^2_n\text{X}_m\text{OSiR}^2_o\text{X}_p$ (where $0 \leq n \leq 3$; $0 \leq m \leq 3$; $0 \leq o \leq 3$; $0 \leq p \leq 3$, where $n + m = 3$, $o + p = 3$),

$\text{SiR}^2_n\text{X}_m\text{NSiR}^2_o\text{X}_p$ (where $0 \leq n \leq 3$; $0 \leq m \leq 3$; $0 \leq o \leq 3$; $0 \leq p \leq 3$, where $n + m = 3$, $o + p = 3$),

and/or

$\text{SiR}^2_n\text{X}_m[\text{SiR}^2_x\text{X}_y\text{O}]_z\text{SiR}^2_o\text{X}_p$ (where $0 \leq n \leq 3$; $0 \leq m \leq 3$; $0 \leq x \leq 2$; $0 \leq y \leq 2$; $0 \leq o \leq 3$; $0 \leq p \leq 3$; $1 \leq z \leq 10000$, where $n + m = 3$, $x + y = 2$, $o + p = 3$)

where

R^2 is alkyl and/or aryl radicals, substituted and/or unsubstituted, having from 1 to 20 carbon atoms, and/or is alkoxy, and/or alkenyl, and/or alkynyl groups, and/or is sulfur-containing groups,

X is a silanol, amino, thiol, halogen, alkoxy, alkenyl and/or hydrogen radical.

18. A process for preparing the silicas as claimed in claim 16 or 17,

which comprises

modifying the precipitated silicas with organosilanes in mixtures of from 0.5 to 50 parts, based on 100 parts of precipitated silica, in particular from 1 to 15 parts, based on 100 parts of precipitated silica, where the reaction between

precipitated silica and organosilane is carried out during the preparation of the mixture (in situ) or externally via spray application and subsequent heat-conditioning of the mixture, via mixing of the organosilane and the silica suspension with subsequent drying and heat-conditioning.

19. The use of silicas as claimed in any of claims 1 to 18 in elastomer mixtures, in vulcanizable rubber mixtures, and/or in other vulcanizates, such as pneumatic tires, tire treads, cable sheathing, hoses, drive belts, conveyor belts, V-belts, roller coverings, tires, shoe soles, gaskets, and damping elements.
20. The use of silicas as claimed in any of claims 1 to 18 in battery separators, as antiblocking agent, as matting agent in inks and paints, as carrier for agricultural products and for feeds, in coatings, in printing inks, in fire-extinguisher powders, in plastics, in the non-impact printing sector, in paper pulp, or in the personal care sector.
21. A vulcanizable rubber mixture or a vulcanizate comprising, as filler, the precipitated silica as claimed in claim 1, with the following physical and chemical properties:
- | | |
|----------------------------|---------------------------|
| CTAB surface area | 100-160 m ² /g |
| BET surface area | 100-190 m ² /g |
| DBP value | 180-300 g/(100 g) |
| Sears value V ₂ | 15-28 ml/(5 g) |
| Moisture level | 4-8%. |